

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NMOCD
Artesia

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMNM0503
2. Name of Operator DEVON ENERGY PRODUCTION CO LP		6. If Indian, Allottee or Tribe Name
Contact: LINDA GOOD Email: linda.good@devn.com		7. If Unit or CA/Agreement, Name and/or No.
3a. Address 333 WEST SHERIDAN AVE OKLAHOMA CITY, OK 73102	3b. Phone No. (include area code) Ph: 405-552-6558	8. Well Name and No. COTTON DRAW UNIT 254H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 1 T25S R31E SESW 10FSL 1650FWL		9. API Well No. 30-015-43848-00-X1
		10. Field and Pool, or Exploratory COTTON DRAW
		11. County or Parish, and State EDDY COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original APD
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomple horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recomple in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Devon respectfully requests to change the Cotton Draw Unit 254 from a one section lateral to a two section lateral. Devon also respectfully requests to update our cement program to reflect a single stage cement job for our primary cement job with a contingency option reflecting a 2 stage DV tool/ECP job. Please see attached updated cement program, directional plan and casing design.

NM OIL CONSERVATION
ARTESIA DISTRICT

OCT 19 2016

RECEIVED

500' tie back on production string.
Secretary's Potash

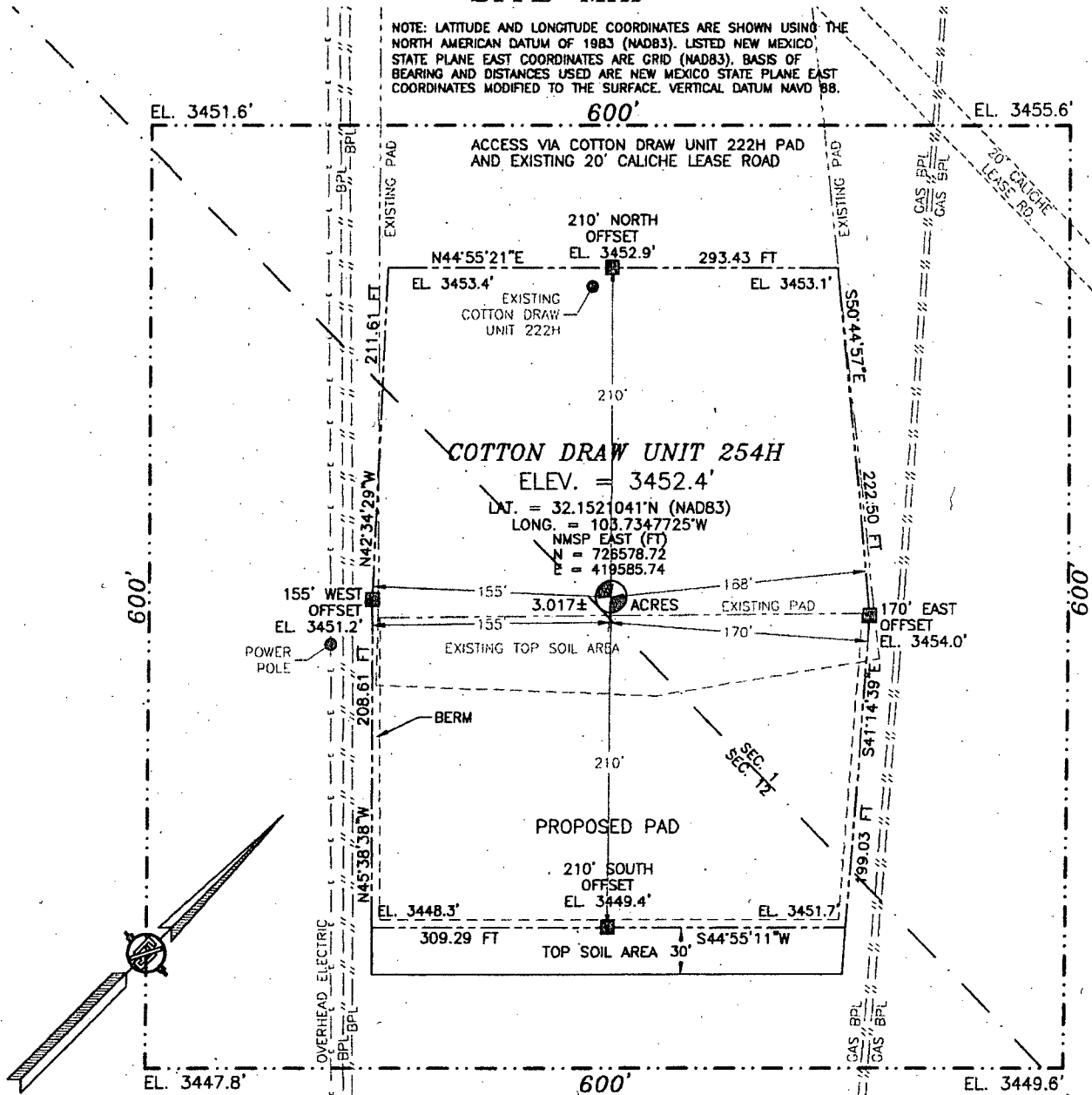
**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

14. I hereby certify that the foregoing is true and correct. Electronic Submission #344989 verified by the BLM Well Information System For DEVON ENERGY PRODUCTION CO LP, sent to the Carlsbad Committed to AFMSS for processing by CHRISTOPHER WALLS on 07/19/2016 (16CRW0073SE)	
Name (Printed/Typed) LINDA GOOD	Title REGULATORY SPECIALIST
Signature (Electronic Submission)	Date 07/19/2016
THIS SPACE FOR FEDERAL OR STATE OFFICE USE	
Approved By _____	Title _____
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.	
Office _____	
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.	

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

**SECTION 1, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP**

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83), LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83), BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE. VERTICAL DATUM NAVD 88.



010 50 100 200

SCALE 1" = 100'
DIRECTIONS TO LOCATION

FROM INTERSECTION HWY #128 AND COUNTY ROAD #1 (ORLA HWY)
GO SOUTH ON COUNTY ROAD #1 APPROX. 6.0 MILES TO MONSANTO
ROAD TURN RIGHT (WEST) GO APPROX. 2.1 MILES ROAD TURNS RIGHT
(NORTH) GO APPROX. 0.9 MILES ROAD TURNS LEFT (WEST) GO
APPROX. 2.0 MILES ROAD TURNS RIGHT (NORTH) GO APPROX. 1.3
MILES TO A LEASE ROAD ON RIGHT (EAST) TURN EAST ON LEASE
ROAD GO APPROX. 0.3 MILES TO AN EXISTING PAD ON RIGHT
(SOUTH) LOCATION IS AT THE SOUTH END OF EXISTING PAD

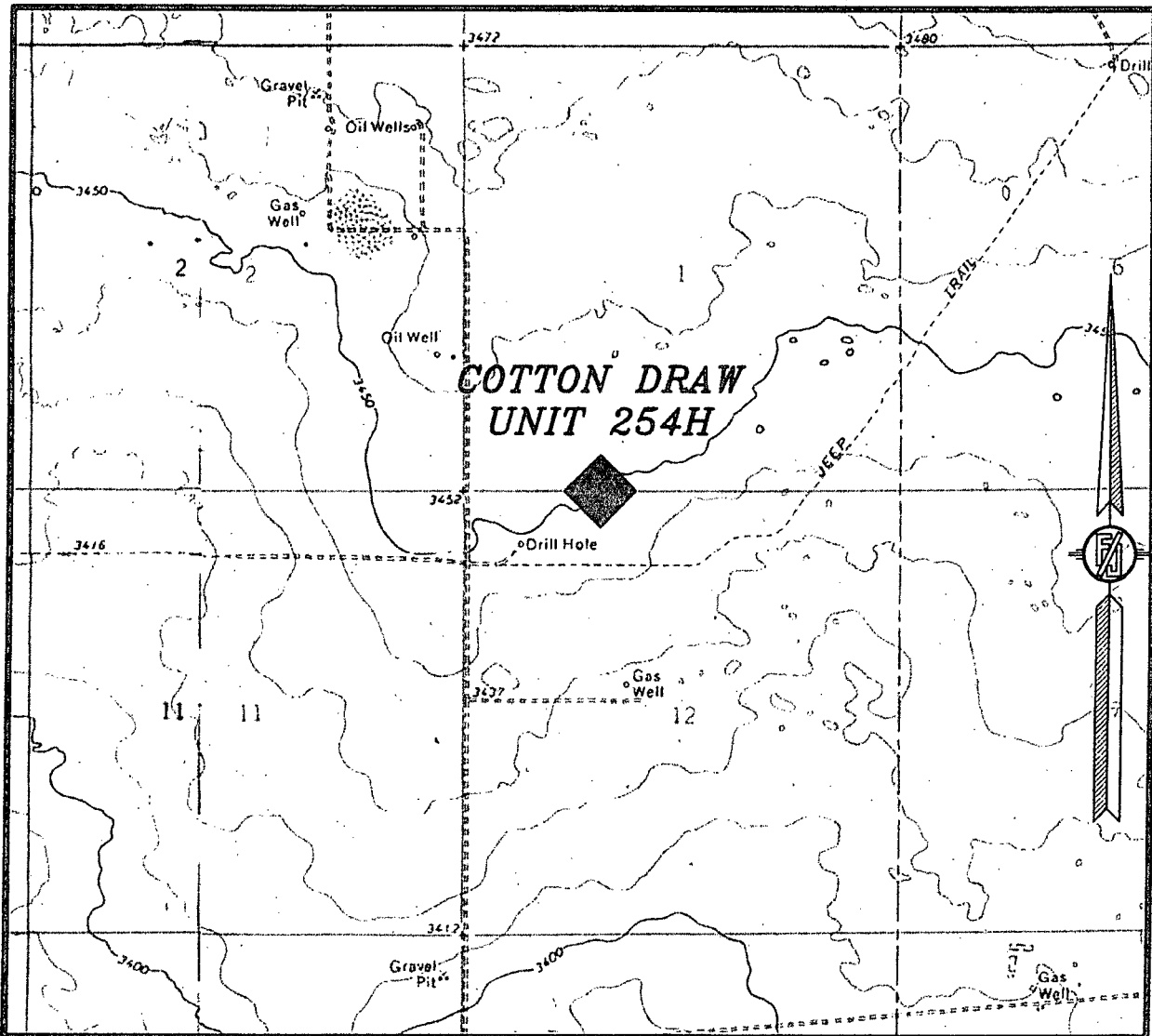
**DEVON ENERGY PRODUCTION COMPANY, L.P.
COTTON DRAW UNIT 254H
LOCATED 10 FT. FROM THE SOUTH LINE
AND 1650 FT. FROM THE WEST LINE OF
SECTION 1, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO**

MAY 19, 2016

SURVEY NO. 3457A

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

SECTION 1, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LOCATION VERIFICATION MAP



USGS QUAD MAP:
PADUCA BREAKS NW

NOT TO SCALE

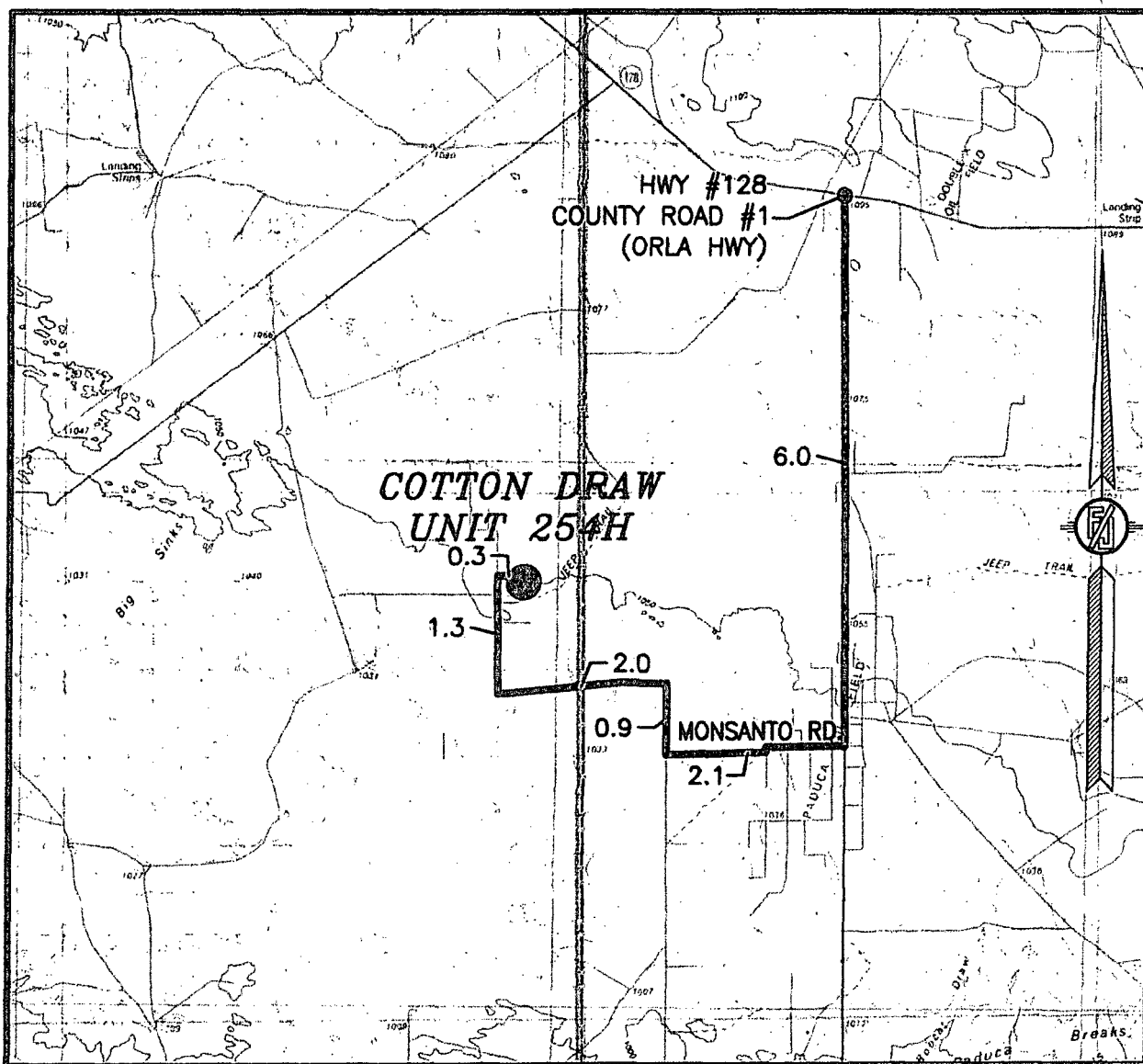
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MAY 19, 2016

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(575) 234-3341

SECTION 1, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

DIRECTIONS TO LOCATION

FROM INTERSECTION HWY #128 AND COUNTY ROAD #1 (ORLA HWY)
GO SOUTH ON COUNTY ROAD #1 APPROX. 6.0 MILES TO MONSANTO
ROAD TURN RIGHT (WEST) GO APPROX. 2.1 MILES ROAD TURNS RIGHT
(NORTH) GO APPROX 0.9 MILES ROAD TURNS LEFT (WEST) GO
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COTTON DRAW UNIT 254H**

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AND 1650 FT. FROM THE WEST LINE OF
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RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MAY 19, 2016

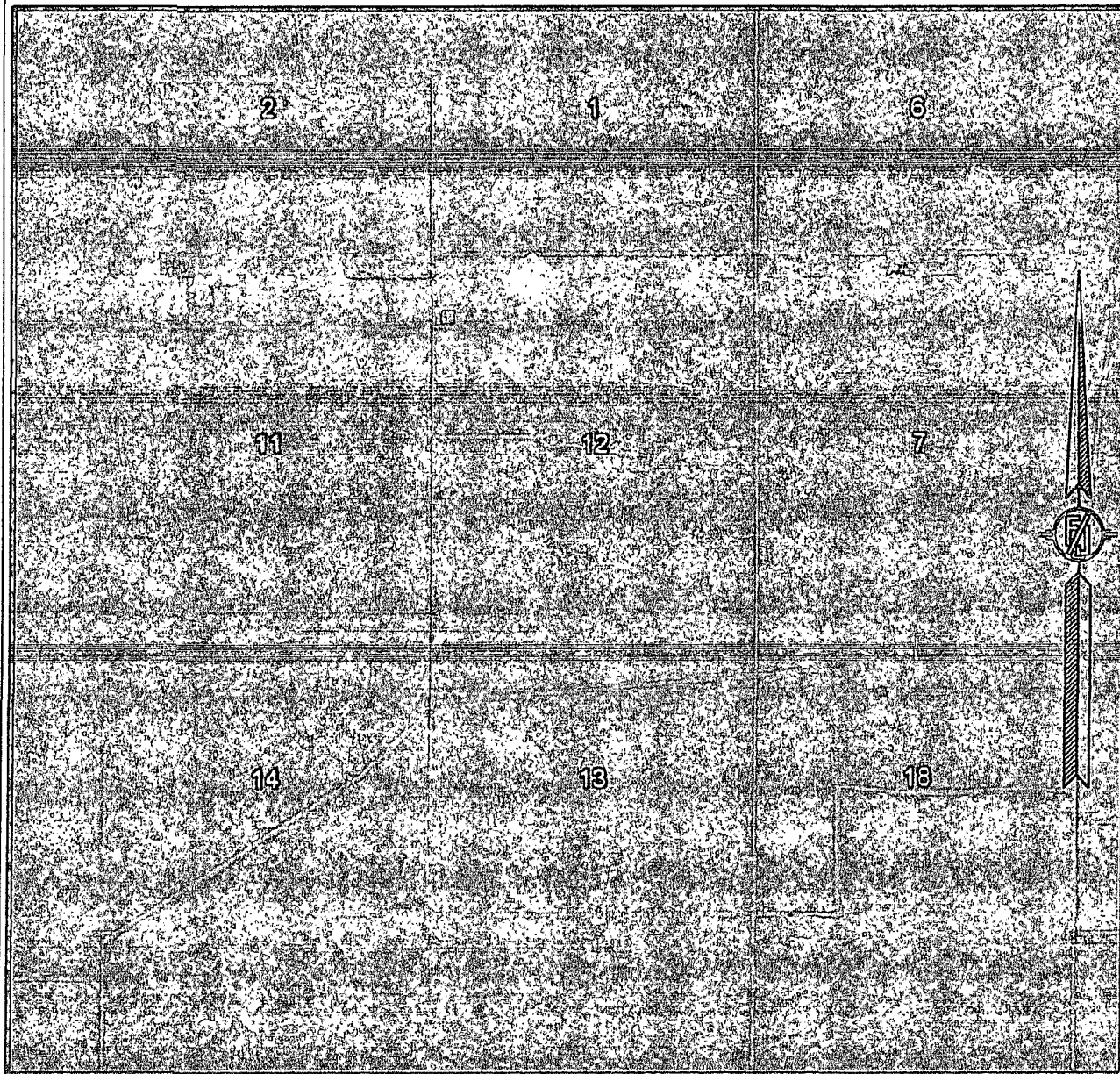
SURVEY NO. 3457A

MADRON SURVEYING, INC.

301 SOUTH CANAL
(575) 234-3341

CARLSBAD, NEW MEXICO

SECTION 1, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
APR. 2014

DEVON ENERGY PRODUCTION COMPANY, L.P.
COTTON DRAW UNIT 254H

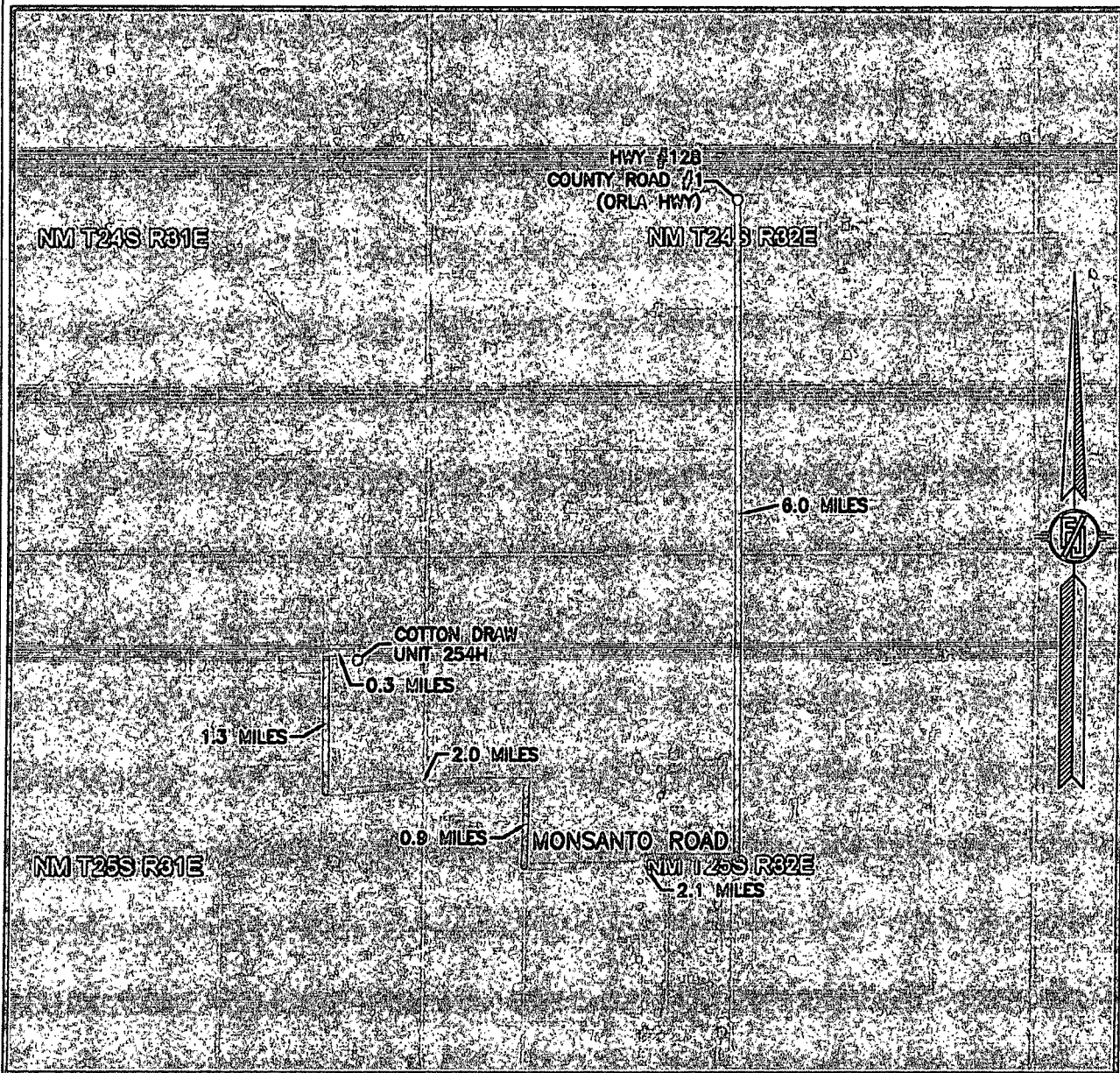
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EDDY COUNTY, STATE OF NEW MEXICO

MAY 19, 2016

SURVEY NO. 3457A

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

SECTION 1, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 AERIAL ACCESS ROUTE MAP



NOT TO SCALE
 AERIAL PHOTO:
 GOOGLE EARTH
 APR. 2014

DEVON ENERGY PRODUCTION COMPANY, L.P.
COTTON DRAW UNIT 254H
 LOCATED 10 FT. FROM THE SOUTH LINE
 AND 1650 FT. FROM THE WEST LINE OF
 SECTION 1, TOWNSHIP 25 SOUTH,
 RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

MAY 19, 2016

SURVEY NO. 3457A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

Cotton Draw Unit 254H Sundry Request

Casing Design

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn	SF Collapse	SF Burst	SF Tension
17.5"	0	750'	13.375"	48	H-40	STC	2.12	4.77	14.54
12.25"	0	3,400' 4,400'	9.625"	36	J-55	LTC	1.15	1.66	1.97
12.25"	3,400'	4,300'	9.625"	40	J-55	LTC	1.18	1.81	3.10
8.75"	0	18,196'	5.5"	17	P-110	BTC	1.54	2.19	3.09
BLM Minimum Safety Factor							1.125	1.00	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Cement Program

Casing	# Sk	Wt. lb/gal	H ₂ O gal/sk	Yld ft ³ /sack	500# Comp.	Slurry Description
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					Strength (hours)	
13-3/8" Surf.	820	14.8	6.32	1.33	7	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
9-5/8" Inter.	910	12.9	9.81	1.85	17	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	430	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
5-1/2" Prod	310	9	13.5	3.27	21	Lead: Tuned Light® Cement
	2590	14.5	5.31	1.2	25	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
5-1/2" Prod Two Stage	310	10.9	20.6	3.31	24	1 st Stage Lead: (50:40:10) Class C: Silicalite: Enhancer 923 + 10% BWOC Bentonite + 0.05% BWOC SA-1015 + 0.3% BWOC HR-800 + 0.2% BWOC FE-2 + 0.125 lb/sk Pol-E-Flake + 0.5 lb/sk D-Air 5000
	2590	14.5	5.31	1.2	25	1 st Stage Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
	DV Tool = 4350ft 4450' (50' below previous shoe)					
	20	10.9	20.6	3.31	24	2 nd Stage Lead: (50:40:10) Class C: Silicalite: Enhancer 923 + 10% BWOC Bentonite + 0.05% BWOC SA-1015 + 0.3% BWOC HR-800 + 0.2% BWOC FE-2 + 0.125 lb/sk Pol-E-Flake + 0.5 lb/sk D-Air 5000
	30	14.8	6.32	1.33	6	2 nd Stage Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake

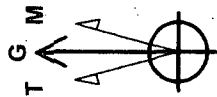
DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
13-3/8" Surface	0'	50%
9-5/8" Intermediate	0'	30%
5-1/2" Production Casing Single Stage Option	4100' 4450'	15%
5-1/2" Production Casing Two Stage Option	1 st Stage = 4350' / 2 nd Stage = 4100'	15%

must tie back 500' to 3900'.
Secretary's Potash.



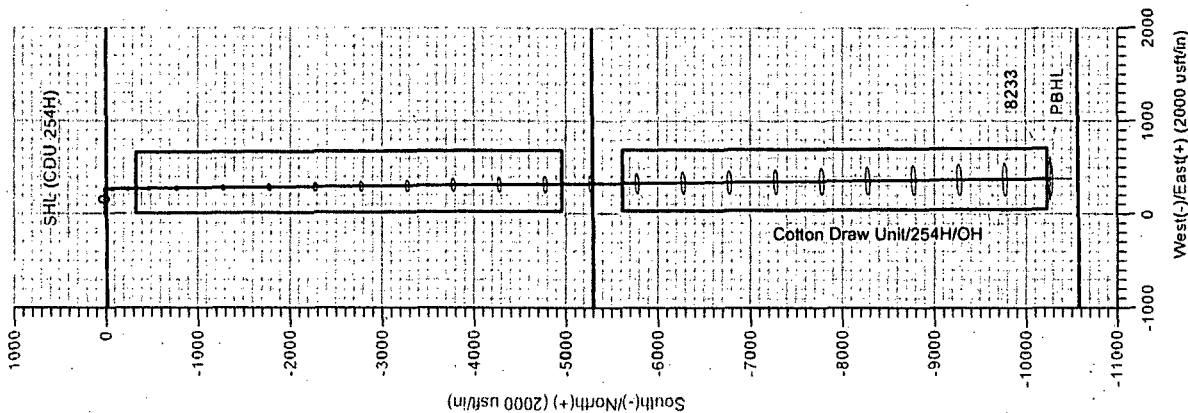
Project: Eddy County, NM (NAD-83)
Site: Cotton Draw Unit
Well: 254H
Wellbore: OH
Design: APD Plan #2



Azimuths to Grid North
True North: -0.32°
Magnetic North: 6.65°
Magnetic Field
Strength: 48161.2 nT
Dip Angle: 59.92°
Date: 7/14/2016
Model: HDGM



Drilling Systems LLC



DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
SHL (CDU 254H)	0.00	0.00	0.00	419585.74	726578.72
PBHL (CDU 254H)	8233.00	-10273.15	378.50	409312.59	726957.22

SECTION DETAILS

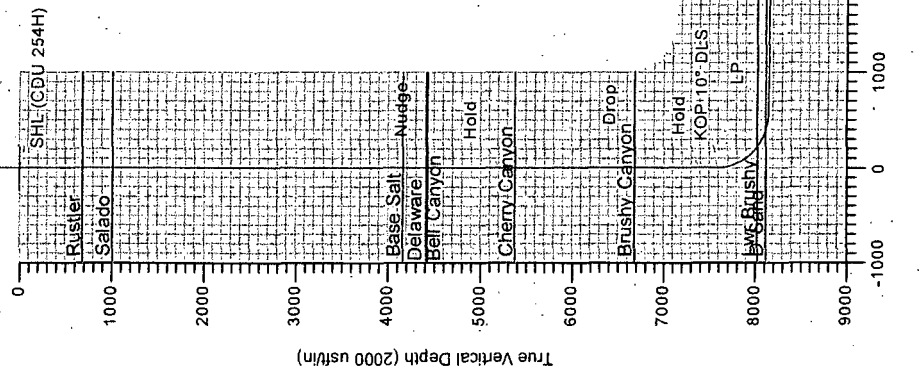
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeal
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4500.00	0.00	0.00	4500.00	0.00	0.00	0.00	0.00	0.00
5200.00	7.00	90.00	5198.26	0.00	42.71	1.00	90.00	0.51
6695.69	7.00	90.00	6682.80	0.00	224.99	0.00	0.00	2.67
7395.89	0.00	0.00	7381.06	0.00	267.69	1.00	180.00	3.18
7595.69	0.00	0.00	7581.06	0.00	267.69	0.00	0.00	3.18
8491.03	89.53	179.38	8154.00	-568.26	273.82	10.00	179.38	571.47
18196.80	89.53	179.38	8233.00	-10273.15	378.50	0.00	0.00	10276.92

PROJECT DETAILS:

Eddy County, NM (NAD-83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
687.40	687.40	Rustler
1012.40	1012.40	Salado
4167.40	4167.40	Base Salt
4419.40	4419.40	Delaware
4434.40	4434.40	Bell Canyon
5385.40	5385.55	Cherry Canyon
6687.40	6700.32	Brushy Canyon
8034.40	8118.69	Lwr Brushy
8127.40	8320.36	D Sand



DEVON ENERGY

Eddy County, NM (NAD-83)

Cotton Draw Unit

254H

OH

Plan: APD Plan #2

Standard Planning Report

14 July, 2016

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 254H
Company:	DEVON ENERGY	TVD Reference:	3452.4' GE + 25' KB @ 3477.40usft (Original Well Elev)
Project:	Eddy County, NM (NAD-83)	MD Reference:	3452.4' GE + 25' KB @ 3477.40usft (Original Well Elev)
Site:	Cotton Draw Unit	North Reference:	Grid
Well:	254H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	APD Plan #2		

Project:	Eddy County, NM (NAD-83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Cotton Draw Unit		
Site Position:		Northing:	419,194.51 usft
From:	Map	Easting:	722,955.98 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 9' 3.901 N
		Longitude:	103° 44' 47.345 W
		Grid Convergence:	0.31 "

Well:	254H		
Well Position	+N-S	391.23 usft	Northing: 419,585.74 usft
	+E-W	3,622.74 usft	Easting: 726,578.72 usft
Position Uncertainty		0.00 usft	Wellhead Elevation: 3,477.40 usft
			Latitude: 32° 9' 7.575 N
			Longitude: 103° 44' 5.181 W
			Ground Level: 3,452.40 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	7/14/2016	6.97	59.92	48,161

Design		APD Plan #2		
Audit Notes:				
Version:		Phase:	PLAN	Tie On Depth: 0.00
Vertical Section	Depth From (TVD)	+N/S	+E/W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	179.32

Plan/Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/S	+E-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,200.00	7.00	90.00	5,198.26	0.00	42.71	1.00	1.00	0.00	90.00	
6,695.69	7.00	90.00	6,682.80	0.00	224.99	0.00	0.00	0.00	0.00	
7,395.69	0.00	0.00	7,381.06	0.00	267.69	1.00	-1.00	0.00	180.00	
7,595.69	0.00	0.00	7,581.06	0.00	267.69	0.00	0.00	0.00	0.00	
8,491.03	89.53	179.38	8,154.00	-568.26	273.82	10.00	10.00	20.04	179.38	
18,196.80	89.53	179.38	8,233.00	-10,273.15	378.50	0.00	0.00	0.00	0.00	PBHL (CDU 254H)

LEAM Drilling Systems LLC

Planning Report

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Site:	Cotton Draw Unit	North Reference:	Grid
Well:	254H	Survey/Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	APD Plan #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (CDU 254H)									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
687.40	0.00	0.00	687.40	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,012.40	0.00	0.00	1,012.40	0.00	0.00	0.00	0.00	0.00	0.00
Salado									
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,167.40	0.00	0.00	4,167.40	0.00	0.00	0.00	0.00	0.00	0.00
Base Salt									
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 254H
Company:	DEVON ENERGY	TVD Reference:	3452.4' GE + 25' KB @ 3477.40usft (Original Well Elev)
Project:	Eddy County, NM (NAD-83)	MD Reference:	3452.4' GE + 25' KB @ 3477.40usft (Original Well Elev)
Site:	Cotton Draw Unit	North Reference:	Grid
Well:	254H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	APD Plan #2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,419.40	0.00	0.00	4,419.40	0.00	0.00	0.00	0.00	0.00	0.00	
Delaware										
4,434.40	0.00	0.00	4,434.40	0.00	0.00	0.00	0.00	0.00	0.00	
Bell Canyon										
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nudge										
4,600.00	1.00	90.00	4,600.00	0.00	0.87	0.01	1.00	1.00	0.00	
4,700.00	2.00	90.00	4,699.96	0.00	3.49	0.04	1.00	1.00	0.00	
4,800.00	3.00	90.00	4,799.86	0.00	7.85	0.09	1.00	1.00	0.00	
4,900.00	4.00	90.00	4,899.68	0.00	13.96	0.17	1.00	1.00	0.00	
5,000.00	5.00	90.00	4,999.37	0.00	21.80	0.26	1.00	1.00	0.00	
5,100.00	6.00	90.00	5,098.90	0.00	31.39	0.37	1.00	1.00	0.00	
5,200.00	7.00	90.00	5,198.26	0.00	42.71	0.51	1.00	1.00	0.00	
Hold										
5,300.00	7.00	90.00	5,297.51	0.00	54.89	0.65	0.00	0.00	0.00	
5,388.55	7.00	90.00	5,385.40	0.00	65.69	0.78	0.00	0.00	0.00	
Cherry Canyon										
5,400.00	7.00	90.00	5,396.77	0.00	67.08	0.80	0.00	0.00	0.00	
5,500.00	7.00	90.00	5,496.02	0.00	79.27	0.94	0.00	0.00	0.00	
5,600.00	7.00	90.00	5,595.28	0.00	91.46	1.09	0.00	0.00	0.00	
5,700.00	7.00	90.00	5,694.53	0.00	103.64	1.23	0.00	0.00	0.00	
5,800.00	7.00	90.00	5,793.79	0.00	115.83	1.37	0.00	0.00	0.00	
5,900.00	7.00	90.00	5,893.04	0.00	128.02	1.52	0.00	0.00	0.00	
6,000.00	7.00	90.00	5,992.30	0.00	140.20	1.66	0.00	0.00	0.00	
6,100.00	7.00	90.00	6,091.55	0.00	152.39	1.81	0.00	0.00	0.00	
6,200.00	7.00	90.00	6,190.81	0.00	164.58	1.95	0.00	0.00	0.00	
6,300.00	7.00	90.00	6,290.06	0.00	176.76	2.10	0.00	0.00	0.00	
6,400.00	7.00	90.00	6,389.32	0.00	188.95	2.24	0.00	0.00	0.00	
6,500.00	7.00	90.00	6,488.57	0.00	201.14	2.39	0.00	0.00	0.00	
6,600.00	7.00	90.00	6,587.82	0.00	213.32	2.53	0.00	0.00	0.00	
6,695.69	7.00	90.00	6,682.80	0.00	224.99	2.67	0.00	0.00	0.00	
Drop										
6,700.00	6.96	90.00	6,687.08	0.00	225.51	2.68	1.00	-1.00	0.00	
6,700.32	6.95	90.00	6,687.40	0.00	225.55	2.68	1.00	-1.00	0.00	
Brushy Canyon										
6,800.00	5.96	90.00	6,786.44	0.00	236.76	2.81	1.00	-1.00	0.00	
6,900.00	4.96	90.00	6,885.99	0.00	246.26	2.92	1.00	-1.00	0.00	
7,000.00	3.96	90.00	6,985.69	0.00	254.04	3.01	1.00	-1.00	0.00	
7,100.00	2.96	90.00	7,085.50	0.00	260.07	3.09	1.00	-1.00	0.00	
7,200.00	1.96	90.00	7,185.41	0.00	264.35	3.14	1.00	-1.00	0.00	
7,300.00	0.96	90.00	7,285.38	0.00	266.89	3.17	1.00	-1.00	0.00	
7,395.69	0.00	0.00	7,381.06	0.00	267.69	3.18	1.00	-1.00	0.00	
Hold										
7,400.00	0.00	0.00	7,385.37	0.00	267.69	3.18	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,485.37	0.00	267.69	3.18	0.00	0.00	0.00	
7,595.69	0.00	0.00	7,581.06	0.00	267.69	3.18	0.00	0.00	0.00	
KOP 10° DLS										
7,600.00	0.43	179.38	7,585.37	-0.02	267.69	3.19	10.00	10.00	0.00	
7,650.00	5.43	179.38	7,635.29	-2.57	267.72	5.75	10.00	10.00	0.00	
7,700.00	10.43	179.38	7,684.80	-9.47	267.80	12.65	10.00	10.00	0.00	
7,750.00	15.43	179.38	7,733.51	-20.65	267.92	23.83	10.00	10.00	0.00	

LEAM Drilling Systems LLC

Planning Report

Database	EDM 5000.1 Single User Db	Local Co-ordinate Reference	Well 254H
Company	DEVON ENERGY	TVD Reference	3452.4' GE + 25' KB @ 3477.40usft (Original Well Elev)
Project	Eddy County, NM (NAD-83)	MD Reference	3452.4' GE + 25' KB @ 3477.40usft (Original Well Elev)
Site	Cotton Draw Unit	North Reference	Grid
Well	254H	Survey Calculation Method	Minimum Curvature
Wellbore	OH		
Design	APD Plan #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,800.00	20.43	179.38	7,781.07	-36.04	268.08	39.22	10.00	10.00	0.00
7,850.00	25.43	179.38	7,827.10	-55.51	268.29	58.69	10.00	10.00	0.00
7,900.00	30.43	179.38	7,871.26	-78.93	268.54	82.11	10.00	10.00	0.00
7,950.00	35.43	179.38	7,913.22	-106.10	268.84	109.28	10.00	10.00	0.00
8,000.00	40.43	179.38	7,952.64	-136.82	269.17	140.01	10.00	10.00	0.00
8,050.00	45.43	179.38	7,989.24	-170.86	269.54	174.05	10.00	10.00	0.00
8,100.00	50.43	179.38	8,022.73	-207.97	269.94	211.16	10.00	10.00	0.00
8,118.69	52.30	179.38	8,034.40	-222.57	270.09	225.76	10.00	10.00	0.00
Lwr Brushy									
8,150.00	55.43	179.38	8,052.86	-247.85	270.37	251.04	10.00	10.00	0.00
8,200.00	60.43	179.38	8,079.40	-290.20	270.82	293.40	10.00	10.00	0.00
8,250.00	65.43	179.38	8,102.14	-334.71	271.30	337.91	10.00	10.00	0.00
8,300.00	70.43	179.38	8,120.92	-381.03	271.80	384.23	10.00	10.00	0.00
8,320.36	72.47	179.38	8,127.40	-400.32	272.01	403.52	10.00	10.00	0.00
D Sand									
8,350.00	75.43	179.38	8,135.60	-428.81	272.32	432.01	10.00	10.00	0.00
8,400.00	80.43	179.38	8,146.05	-477.68	272.85	480.89	10.00	10.00	0.00
8,450.00	85.43	179.38	8,152.20	-527.29	273.38	530.49	10.00	10.00	0.00
8,491.03	89.53	179.38	8,154.00	-568.26	273.82	571.47	10.00	10.00	0.00
LP									
8,500.00	89.53	179.38	8,154.07	-577.23	273.92	580.44	0.00	0.00	0.00
8,600.00	89.53	179.38	8,154.89	-677.22	275.00	680.44	0.00	0.00	0.00
8,700.00	89.53	179.38	8,155.70	-777.22	276.08	780.44	0.00	0.00	0.00
8,800.00	89.53	179.38	8,156.52	-877.21	277.16	880.43	0.00	0.00	0.00
8,900.00	89.53	179.38	8,157.33	-977.20	278.23	980.43	0.00	0.00	0.00
9,000.00	89.53	179.38	8,158.14	-1,077.19	279.31	1,080.43	0.00	0.00	0.00
9,100.00	89.53	179.38	8,158.96	-1,177.18	280.39	1,180.42	0.00	0.00	0.00
9,200.00	89.53	179.38	8,159.77	-1,277.17	281.47	1,280.42	0.00	0.00	0.00
9,300.00	89.53	179.38	8,160.58	-1,377.16	282.55	1,380.42	0.00	0.00	0.00
9,400.00	89.53	179.38	8,161.40	-1,477.15	283.63	1,480.41	0.00	0.00	0.00
9,500.00	89.53	179.38	8,162.21	-1,577.14	284.70	1,580.41	0.00	0.00	0.00
9,600.00	89.53	179.38	8,163.03	-1,677.13	285.78	1,680.41	0.00	0.00	0.00
9,700.00	89.53	179.38	8,163.84	-1,777.12	286.86	1,780.40	0.00	0.00	0.00
9,800.00	89.53	179.38	8,164.65	-1,877.12	287.94	1,880.40	0.00	0.00	0.00
9,900.00	89.53	179.38	8,165.47	-1,977.11	289.02	1,980.40	0.00	0.00	0.00
10,000.00	89.53	179.38	8,166.28	-2,077.10	290.10	2,080.39	0.00	0.00	0.00
10,100.00	89.53	179.38	8,167.10	-2,177.09	291.18	2,180.39	0.00	0.00	0.00
10,200.00	89.53	179.38	8,167.91	-2,277.08	292.25	2,280.39	0.00	0.00	0.00
10,300.00	89.53	179.38	8,168.72	-2,377.07	293.33	2,380.38	0.00	0.00	0.00
10,400.00	89.53	179.38	8,169.54	-2,477.06	294.41	2,480.38	0.00	0.00	0.00
10,500.00	89.53	179.38	8,170.35	-2,577.05	295.49	2,580.38	0.00	0.00	0.00
10,600.00	89.53	179.38	8,171.17	-2,677.04	296.57	2,680.37	0.00	0.00	0.00
10,700.00	89.53	179.38	8,171.98	-2,777.03	297.65	2,780.37	0.00	0.00	0.00
10,800.00	89.53	179.38	8,172.79	-2,877.02	298.73	2,880.37	0.00	0.00	0.00
10,900.00	89.53	179.38	8,173.61	-2,977.01	299.80	2,980.36	0.00	0.00	0.00
11,000.00	89.53	179.38	8,174.42	-3,077.01	300.88	3,080.36	0.00	0.00	0.00
11,100.00	89.53	179.38	8,175.24	-3,177.00	301.96	3,180.36	0.00	0.00	0.00
11,200.00	89.53	179.38	8,176.05	-3,276.99	303.04	3,280.35	0.00	0.00	0.00
11,300.00	89.53	179.38	8,176.86	-3,376.98	304.12	3,380.35	0.00	0.00	0.00
11,400.00	89.53	179.38	8,177.68	-3,476.97	305.20	3,480.35	0.00	0.00	0.00
11,500.00	89.53	179.38	8,178.49	-3,576.96	306.27	3,580.34	0.00	0.00	0.00
11,600.00	89.53	179.38	8,179.31	-3,676.95	307.35	3,680.34	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 254H
Company:	DEVON ENERGY	TVD Reference:	3452.4' GE + 25' KB @ 3477.40usft (Original Well Elev)
Project:	Eddy County, NM (NAD-83)	MD Reference:	3452.4' GE + 25' KB @ 3477.40usft (Original Well Elev)
Site:	Cotton Draw Unit	North Reference:	Grid
Well:	254H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	APD Plan #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,700.00	89.53	179.38	8,180.12	-3,776.94	308.43	3,780.34	0.00	0.00	0.00
11,800.00	89.53	179.38	8,180.93	-3,876.93	309.51	3,880.33	0.00	0.00	0.00
11,900.00	89.53	179.38	8,181.75	-3,976.92	310.59	3,980.33	0.00	0.00	0.00
12,000.00	89.53	179.38	8,182.56	-4,076.91	311.67	4,080.33	0.00	0.00	0.00
12,100.00	89.53	179.38	8,183.38	-4,176.91	312.75	4,180.32	0.00	0.00	0.00
12,200.00	89.53	179.38	8,184.19	-4,276.90	313.82	4,280.32	0.00	0.00	0.00
12,300.00	89.53	179.38	8,185.00	-4,376.89	314.90	4,380.32	0.00	0.00	0.00
12,400.00	89.53	179.38	8,185.82	-4,476.88	315.98	4,480.31	0.00	0.00	0.00
12,500.00	89.53	179.38	8,186.63	-4,576.87	317.06	4,580.31	0.00	0.00	0.00
12,600.00	89.53	179.38	8,187.45	-4,676.86	318.14	4,680.31	0.00	0.00	0.00
12,700.00	89.53	179.38	8,188.26	-4,776.85	319.22	4,780.30	0.00	0.00	0.00
12,800.00	89.53	179.38	8,189.07	-4,876.84	320.30	4,880.30	0.00	0.00	0.00
12,900.00	89.53	179.38	8,189.89	-4,976.83	321.37	4,980.30	0.00	0.00	0.00
13,000.00	89.53	179.38	8,190.70	-5,076.82	322.45	5,080.29	0.00	0.00	0.00
13,100.00	89.53	179.38	8,191.51	-5,176.81	323.53	5,180.29	0.00	0.00	0.00
13,200.00	89.53	179.38	8,192.33	-5,276.80	324.61	5,280.29	0.00	0.00	0.00
13,300.00	89.53	179.38	8,193.14	-5,376.80	325.69	5,380.28	0.00	0.00	0.00
13,400.00	89.53	179.38	8,193.96	-5,476.79	326.77	5,480.28	0.00	0.00	0.00
13,500.00	89.53	179.38	8,194.77	-5,576.78	327.84	5,580.28	0.00	0.00	0.00
13,600.00	89.53	179.38	8,195.58	-5,676.77	328.92	5,680.27	0.00	0.00	0.00
13,700.00	89.53	179.38	8,196.40	-5,776.76	330.00	5,780.27	0.00	0.00	0.00
13,800.00	89.53	179.38	8,197.21	-5,876.75	331.08	5,880.27	0.00	0.00	0.00
13,900.00	89.53	179.38	8,198.03	-5,976.74	332.16	5,980.26	0.00	0.00	0.00
14,000.00	89.53	179.38	8,198.84	-6,076.73	333.24	6,080.26	0.00	0.00	0.00
14,100.00	89.53	179.38	8,199.65	-6,176.72	334.32	6,180.26	0.00	0.00	0.00
14,200.00	89.53	179.38	8,200.47	-6,276.71	335.39	6,280.25	0.00	0.00	0.00
14,300.00	89.53	179.38	8,201.28	-6,376.70	336.47	6,380.25	0.00	0.00	0.00
14,400.00	89.53	179.38	8,202.10	-6,476.70	337.55	6,480.25	0.00	0.00	0.00
14,500.00	89.53	179.38	8,202.91	-6,576.69	338.63	6,580.24	0.00	0.00	0.00
14,600.00	89.53	179.38	8,203.72	-6,676.68	339.71	6,680.24	0.00	0.00	0.00
14,700.00	89.53	179.38	8,204.54	-6,776.67	340.79	6,780.24	0.00	0.00	0.00
14,800.00	89.53	179.38	8,205.35	-6,876.66	341.87	6,880.23	0.00	0.00	0.00
14,900.00	89.53	179.38	8,206.17	-6,976.65	342.94	6,980.23	0.00	0.00	0.00
15,000.00	89.53	179.38	8,206.98	-7,076.64	344.02	7,080.23	0.00	0.00	0.00
15,100.00	89.53	179.38	8,207.79	-7,176.63	345.10	7,180.22	0.00	0.00	0.00
15,200.00	89.53	179.38	8,208.61	-7,276.62	346.18	7,280.22	0.00	0.00	0.00
15,300.00	89.53	179.38	8,209.42	-7,376.61	347.26	7,380.22	0.00	0.00	0.00
15,400.00	89.53	179.38	8,210.24	-7,476.60	348.34	7,480.21	0.00	0.00	0.00
15,500.00	89.53	179.38	8,211.05	-7,576.60	349.41	7,580.21	0.00	0.00	0.00
15,600.00	89.53	179.38	8,211.86	-7,676.59	350.49	7,680.20	0.00	0.00	0.00
15,700.00	89.53	179.38	8,212.68	-7,776.58	351.57	7,780.20	0.00	0.00	0.00
15,800.00	89.53	179.38	8,213.49	-7,876.57	352.65	7,880.20	0.00	0.00	0.00
15,900.00	89.53	179.38	8,214.31	-7,976.56	353.73	7,980.19	0.00	0.00	0.00
16,000.00	89.53	179.38	8,215.12	-8,076.55	354.81	8,080.19	0.00	0.00	0.00
16,100.00	89.53	179.38	8,215.93	-8,176.54	355.89	8,180.19	0.00	0.00	0.00
16,200.00	89.53	179.38	8,216.75	-8,276.53	356.96	8,280.18	0.00	0.00	0.00
16,300.00	89.53	179.38	8,217.56	-8,376.52	358.04	8,380.18	0.00	0.00	0.00
16,400.00	89.53	179.38	8,218.38	-8,476.51	359.12	8,480.18	0.00	0.00	0.00
16,500.00	89.53	179.38	8,219.19	-8,576.50	360.20	8,580.17	0.00	0.00	0.00
16,600.00	89.53	179.38	8,220.00	-8,676.49	361.28	8,680.17	0.00	0.00	0.00
16,700.00	89.53	179.38	8,220.82	-8,776.49	362.36	8,780.17	0.00	0.00	0.00
16,800.00	89.53	179.38	8,221.63	-8,876.48	363.44	8,880.16	0.00	0.00	0.00

LEAM Drilling Systems LLC

Planning Report

Database Company:	EDM 5000.1 Single User Db DEVON ENERGY	Local Co-ordinate Reference:	Well 254H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	3452.4' GE + 25' KB @ 3477.40usft (Original Well Elev)
Site:	Cotton Draw Unit	MD Reference:	3452.4' GE + 25' KB @ 3477.40usft (Original Well Elev)
Well:	254H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	APD Plan #2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
16,900.00	89.53	179.38	8,222.44	-8,976.47	364.51	8,980.16	0.00	0.00	0.00	
17,000.00	89.53	179.38	8,223.26	-9,076.46	365.59	9,080.16	0.00	0.00	0.00	
17,100.00	89.53	179.38	8,224.07	-9,176.45	366.67	9,180.15	0.00	0.00	0.00	
17,200.00	89.53	179.38	8,224.89	-9,276.44	367.75	9,280.15	0.00	0.00	0.00	
17,300.00	89.53	179.38	8,225.70	-9,376.43	368.83	9,380.15	0.00	0.00	0.00	
17,400.00	89.53	179.38	8,226.51	-9,476.42	369.91	9,480.14	0.00	0.00	0.00	
17,500.00	89.53	179.38	8,227.33	-9,576.41	370.98	9,580.14	0.00	0.00	0.00	
17,600.00	89.53	179.38	8,228.14	-9,676.40	372.06	9,680.14	0.00	0.00	0.00	
17,700.00	89.53	179.38	8,228.96	-9,776.39	373.14	9,780.13	0.00	0.00	0.00	
17,800.00	89.53	179.38	8,229.77	-9,876.39	374.22	9,880.13	0.00	0.00	0.00	
17,900.00	89.53	179.38	8,230.58	-9,976.38	375.30	9,980.13	0.00	0.00	0.00	
18,000.00	89.53	179.38	8,231.40	-10,076.37	376.38	10,080.12	0.00	0.00	0.00	
18,100.00	89.53	179.38	8,232.21	-10,176.36	377.46	10,180.12	0.00	0.00	0.00	
18,196.80	89.53	179.38	8,233.00	-10,273.15	378.50	10,276.92	0.00	0.00	0.00	
TD - PBHL (CDU 254H)										

Design Targets									
Target Name	hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	
SHL (CDU 254H)	- plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	419,585.74	726,578.72	32° 9' 7.575 N 103° 44' 5.181 W
PBHL (CDU 254H)	- plan hits target center - Point	0.00	0.00	8,233.00	-10,273.15	378.50	409,312.59	726,957.22	32° 7' 25.894 N 103° 44' 1.444 W

Formations							
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)		
687.40	687.40	Rustler		0.00			
1,012.40	1,012.40	Salado		0.00			
4,167.40	4,167.40	Base Salt		0.00			
4,419.40	4,419.40	Delaware		0.00			
4,434.40	4,434.40	Bell Canyon		0.00			
5,388.55	5,385.40	Cherry Canyon		0.00			
6,700.32	6,687.40	Brushy Canyon		0.00			
8,118.69	8,034.40	Lwr Brushy		0.00			
8,320.36	8,127.40	D Sand		0.00			

LEAM Drilling Systems LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local/Co-ordinate/Reference:	Well 254H
Company:	DEVON ENERGY	TVD/Reference:	3452.4' GE + 25' KB @ 3477.40usft (Original Well Elev)
Project:	Eddy County, NM (NAD-83)	MD/Reference:	3452.4' GE + 25' KB @ 3477.40usft (Original Well Elev)
Site:	Cotton Draw Unit	North/Reference:	Grid
Well:	254H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	APD Plan #2		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		N/S (usft)	E/W (usft)	
4,500.00	4,500.00	0.00	0.00	Nudge
5,200.00	5,198.26	0.00	42.71	Hold
6,695.69	6,682.80	0.00	224.99	Drop
7,395.69	7,381.06	0.00	267.69	Hold
7,595.69	7,581.06	0.00	267.69	KOP 10" DLS
8,491.03	8,154.00	-568.26	273.82	LP
18,196.80	8,233.00	-10,273.15	378.50	TD

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Devon Energy Production Company, L.P.
LEASE NO.:	NMNM-000503
WELL NAME & NO.:	Cotton Draw Unit 254H
SURFACE HOLE FOOTAGE:	0010' FSL & 1650' FWL
BOTTOM HOLE FOOTAGE:	0290' FSL & 1980' FWL Sec. 13, T. 25 S., R 31 E.
LOCATION:	Section 01, T. 25 S., R 31 E., NMPM
COUNTY:	Eddy County, New Mexico

The original COAs still stand with the following drilling modifications:

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(575) 361-2822

1. **Hydrogen Sulfide (H₂S) monitors shall be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**
2. **Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Potash Areas:

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least **24 hours**. WOC time will be recorded in the driller's log.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Secretary's Potash

Possibility of water flows in the Salado and Castile.

Possibility of lost circulation in the Red Beds, Rustler, and Delaware.

1. The 13-3/8 inch surface casing shall be set at approximately **750 feet** (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

- b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
- d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

- 2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing, which shall be set at approximately 4400 feet (in the basal anhydrite of the Castile formation or the Lamar Limestone), is:
 - ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash.**

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

- 3. The minimum required fill of cement behind the 5-1/2 inch production casing is:

Option #1 (Single Stage):

- ☒ Cement as proposed by operator (**minimum of 500' tie back**). Operator shall provide method of verification. **Excess calculates to 14% - Additional cement may be required.**

Option #2:

DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

- a. First stage to DV tool:
 - ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve approved top of cement on the next stage. **Excess calculates to 19% - Additional cement may be required.**

b. Second stage above DV tool:

- ☒ Cement as proposed by operator (**minimum of 500' tie back**). Operator shall provide method of verification. **Excess calculates to negative 27% - Additional cement will be required.**

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.
2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).
3. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi.**
 - a. **Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.**
 - b. **If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.**
 - c. **Manufacturer representative shall install the test plug for the initial BOP test.**
 - d. **Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.**
 - e. **If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.**

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
- a. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
 - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
 - c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
 - d. The results of the test shall be reported to the appropriate BLM office.
 - e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
 - f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

JAM 092716